New Hampshire Groundwater Level Monitoring

February, 2020

New Hampshire Geological Survey
29 Hazen Drive, PO Box 95
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March 12, 2020

GROUNDWATER CONDITIONS SUMMARY

According to the Northeast Regional Climate Center (NRCC) at Cornell University, New Hampshire received an average of 3.17 inches of precipitation during the month of February, which is 0.14 inches above normal or 105% of normal based on the 1981-2010 precipitation records. Precipitation was somewhat unevenly distributed between northern and southern portions of the state (right). The northern portion of the state received an above normal amount of precipitation (112% of normal) this month for the second month in a row. The southern portion of the state received a normal amount of precipitation for February (101% of normal), not yet making up for the below average month of January. The state is currently free from drought conditions according to data released by the National Drought Mitigation Center on March 10, 2020.

Figure 1 shows the monthly status of groundwater levels for both bedrock and overburden wells in the network. Only wells with 10 years or more of record are placed within statistical categories of low through high. Bedrock wells are installed into bedrock and overburden wells are installed in the unconsolidated materials above bedrock.

Overall, the groundwater wells indicate normal to high water levels in the central and southeastern portions of the state (Fig. 1). Wells along the western side of the state within the Connecticut River Valley show mixed levels from low to high (i.e., Lancaster, Colebrook, Lisbon and Newport). Of these, the northwestern wells, Colebrook and Lancaster, are Low. The west-central well in Lisbon is high, and the two southwestern wells in Newport are below normal.

The three bedrock wells that have 10 years or more of record, two in Concord and one in Hooksett, show normal to above normal levels. Hooksett has recovered to normal levels after a below normal to low period from March to November 2019.

Considering the 12-month hydrographs below*, most wells indicate that groundwater levels across the state have been in the normal range in the past 12-month period. Exceptions include the Lancaster well, which has been low since May, and the Colebrook well, which is currently low for the second time in the last 12-month period.

The New Hampshire Geological Survey's groundwater monitoring network (Figure 1) currently includes 11 bedrock and 20 overburden (Figure 2) observation wells, all of which are measured monthly by hand. Using the monthly hand readings, monthly averages and percentile statistics were calculated and are summarized in Figure 1 and the following hydrographs*, and in Table 1.

*The hydrographs show the following data over a period of six months: (1) monthly groundwater depths in red, (2) the monthly average over the period of record (POR) of the well, and (3) color-coded statistical ranges over the POR of the well. Note the POR is listed below each month's column on the chart and reported as the number of measurements for that respective month. This might include multiple readings in the same month and does not include any gaps in data so therefore may not represent a continuous period.

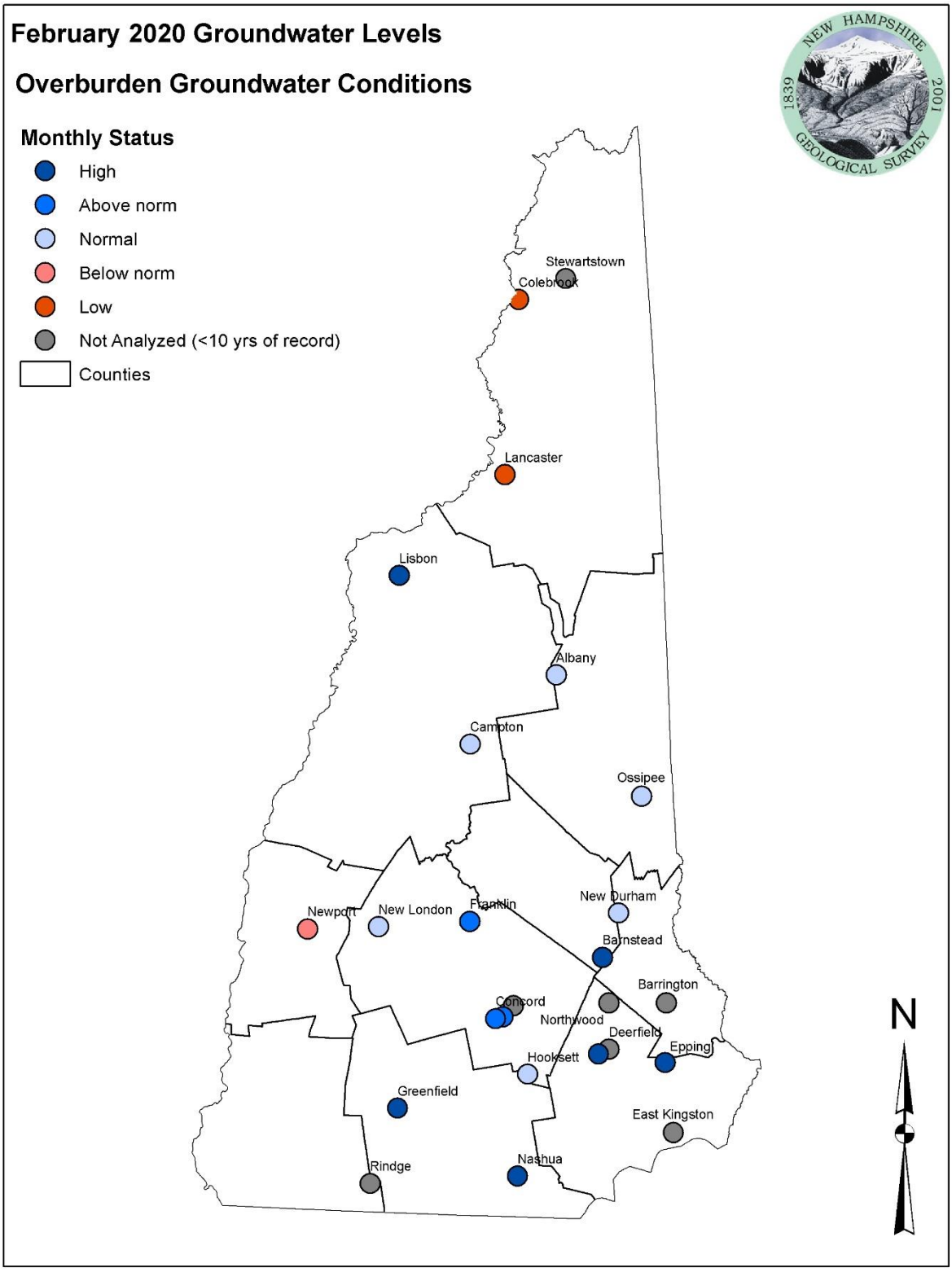
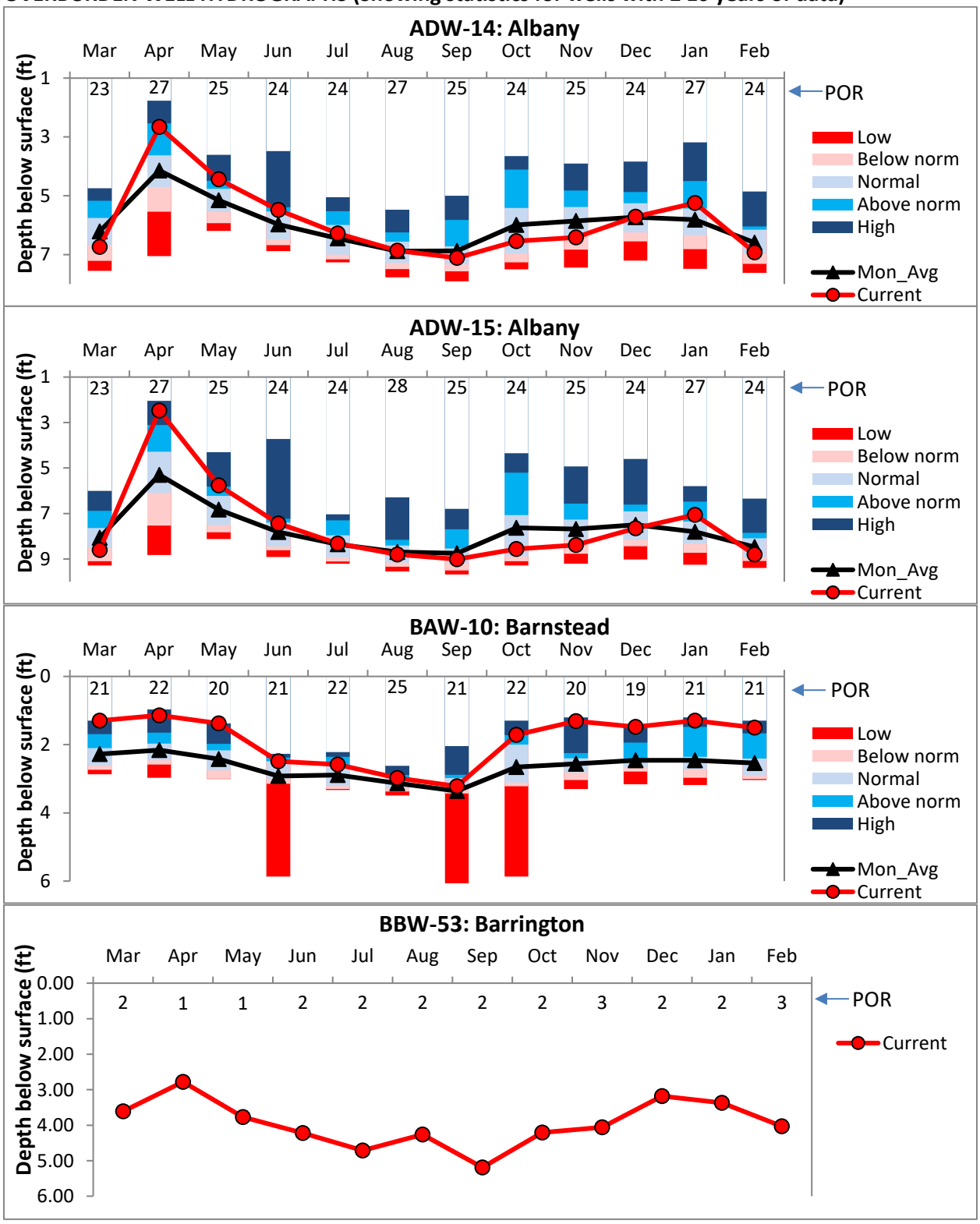
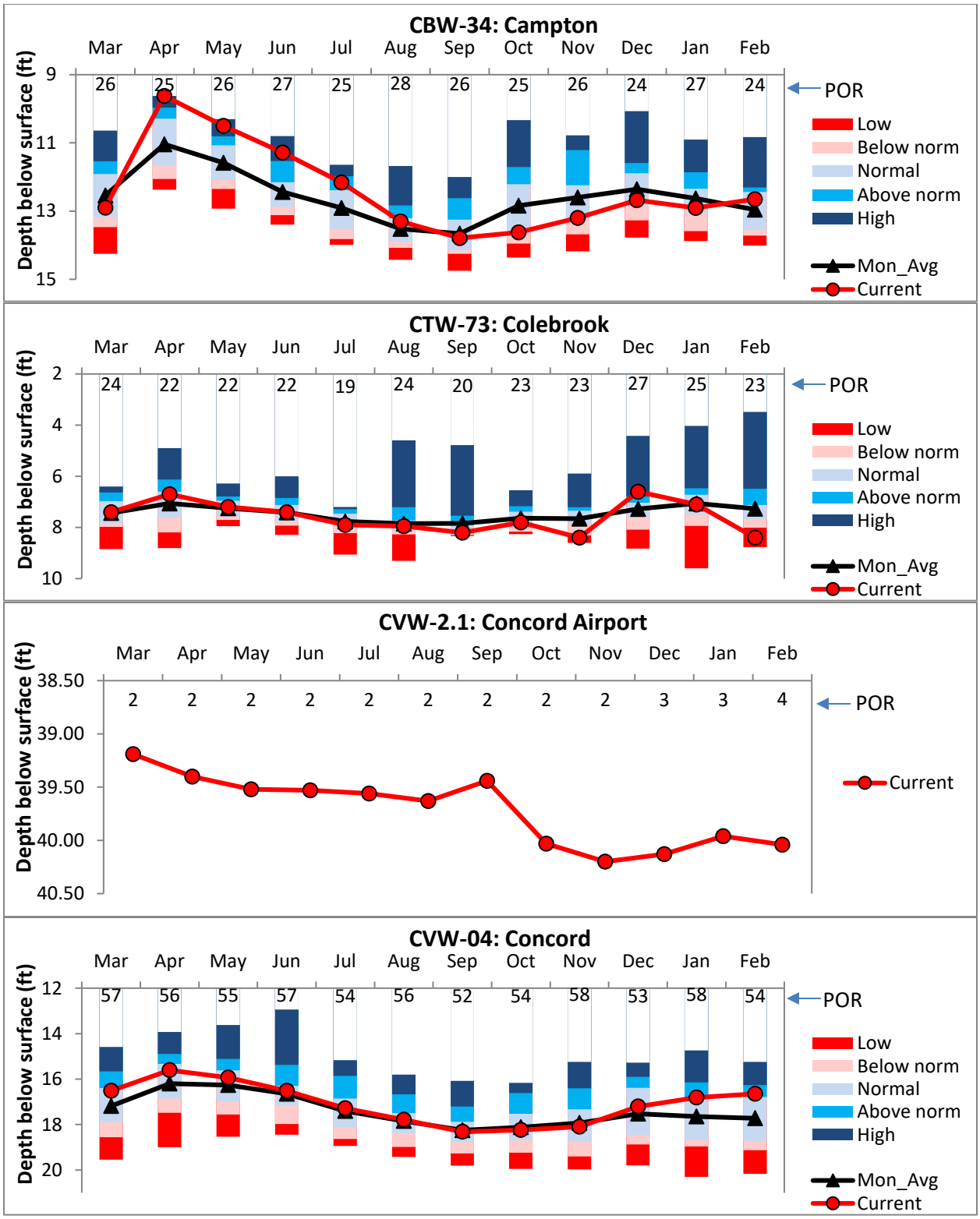
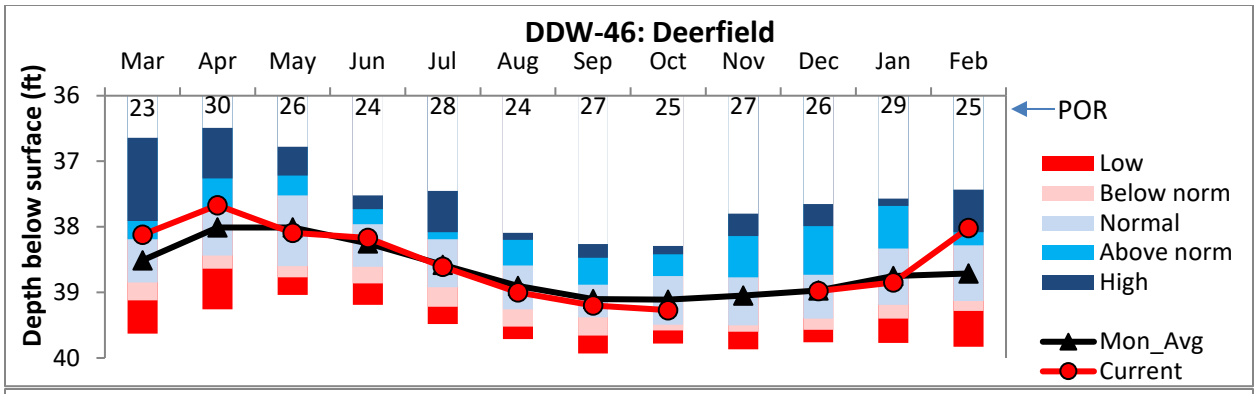


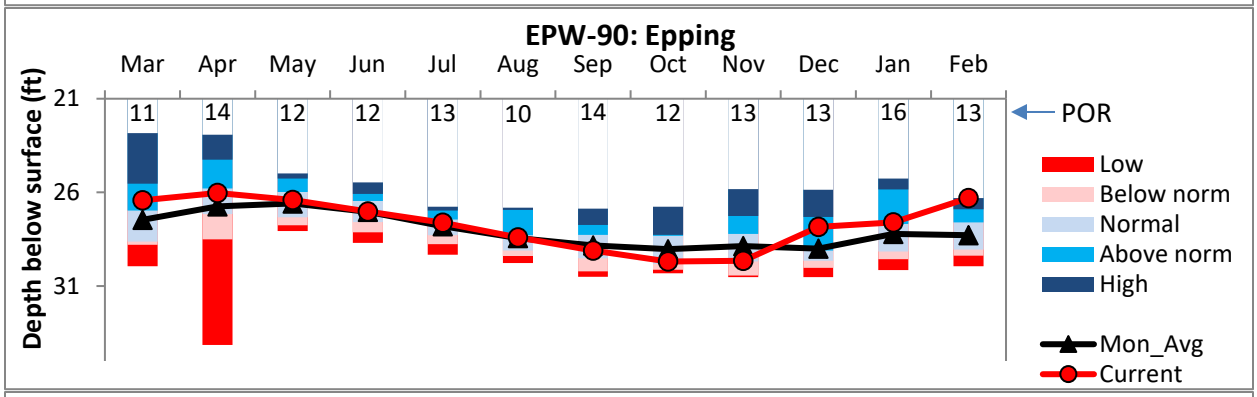
Figure 1. Groundwater Monitoring Network showing groundwater levels relative to statistical envelopes calculated over each well's period of record (POR).

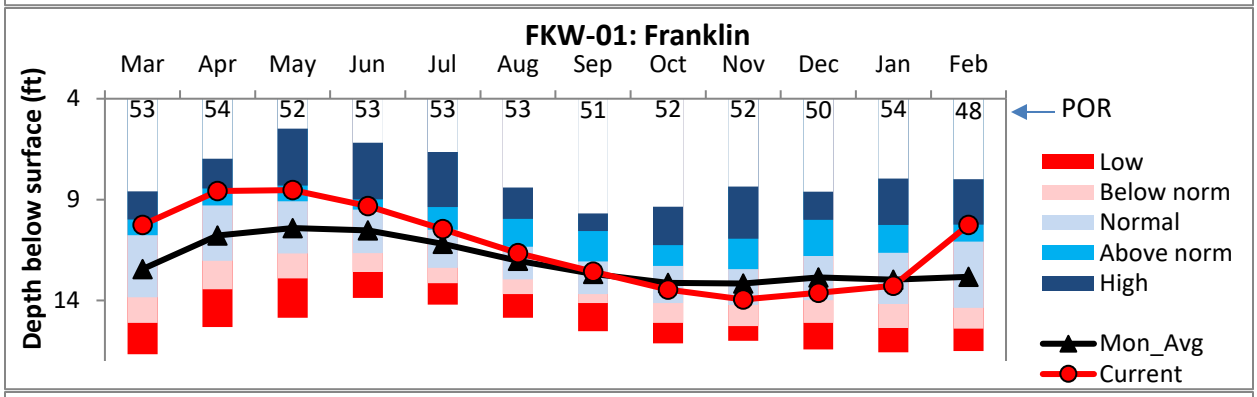
OVERBURDEN WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)

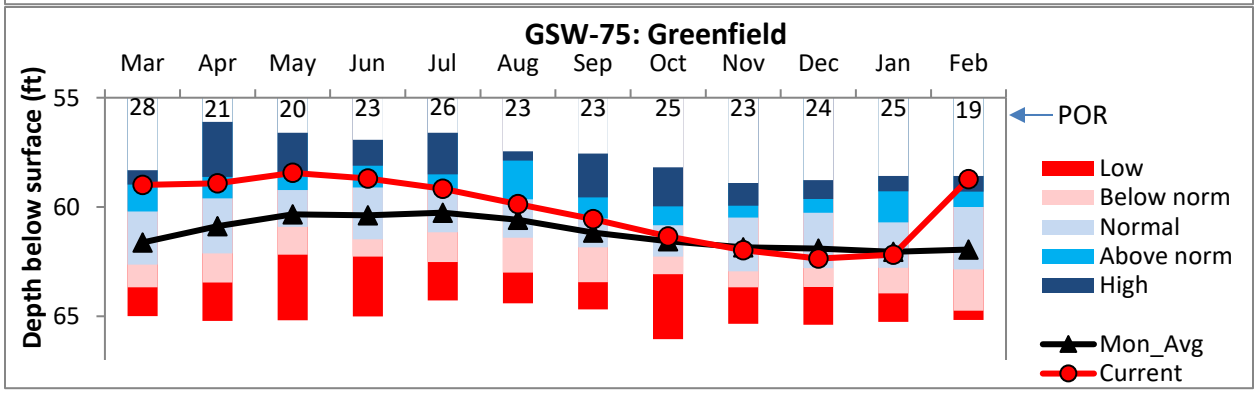


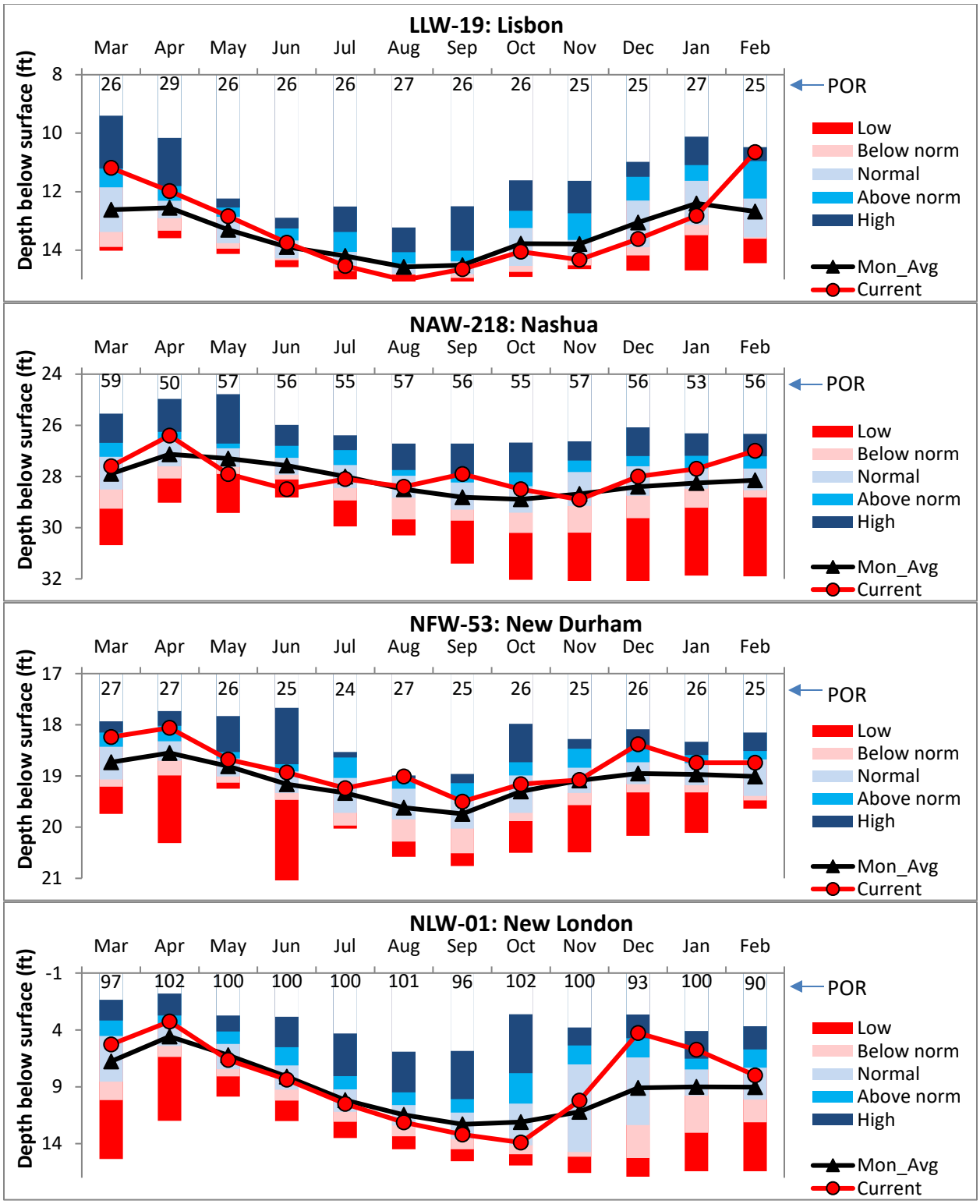

CBW-34: Campton
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
9 11 13 15
26 25 26 27 25 28 26 25 26 24 27 24
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
CTW-73: Colebrook
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
2 4 6 8 10
24 22 22 22 19 24 20 23 23 27 25 23
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
CVW-2.1: Concord Airport
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
38.50 39.00 39.50 40.00 40.50
2 2 2 2 2 2 2 2 2 3 3 4
POR
Current
CVW-04: Concord
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
12 14 16 18 20
57 56 55 57 54 56 52 54 58 53 58 54
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

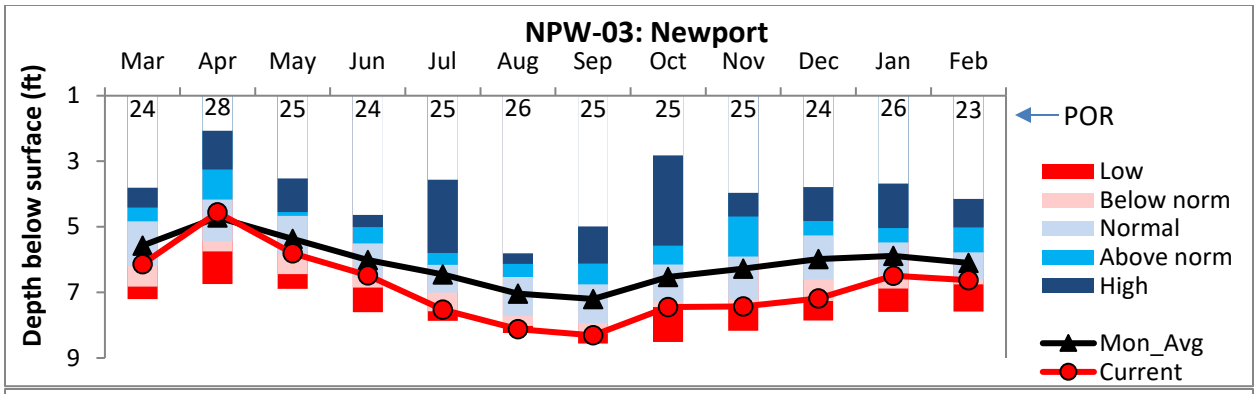

DDW-46: Deerfield
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
36 37 38 39 40
23 30 26 24 28 24 27 25 27 26 29 25
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

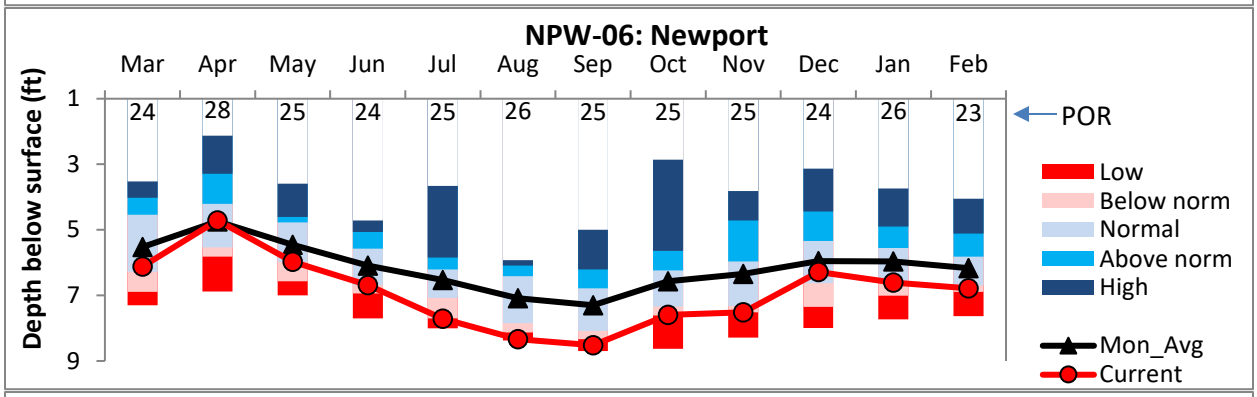

EPW-90: Epping
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
21 26 31
11 14 12 12 13 10 14 12 13 13 16 13
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

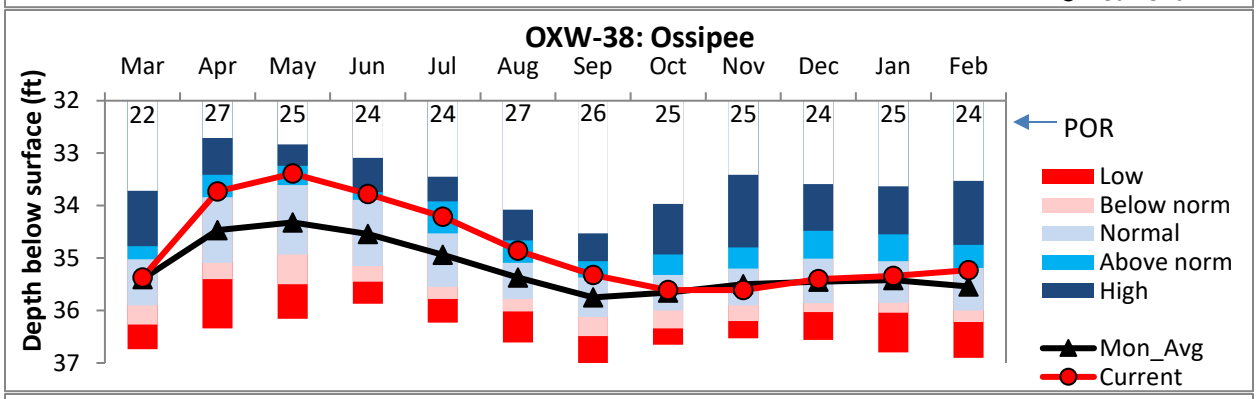

FKW-01: Franklin
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
4 9 14
53 54 52 53 53 53 51 52 52 50 54 48
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

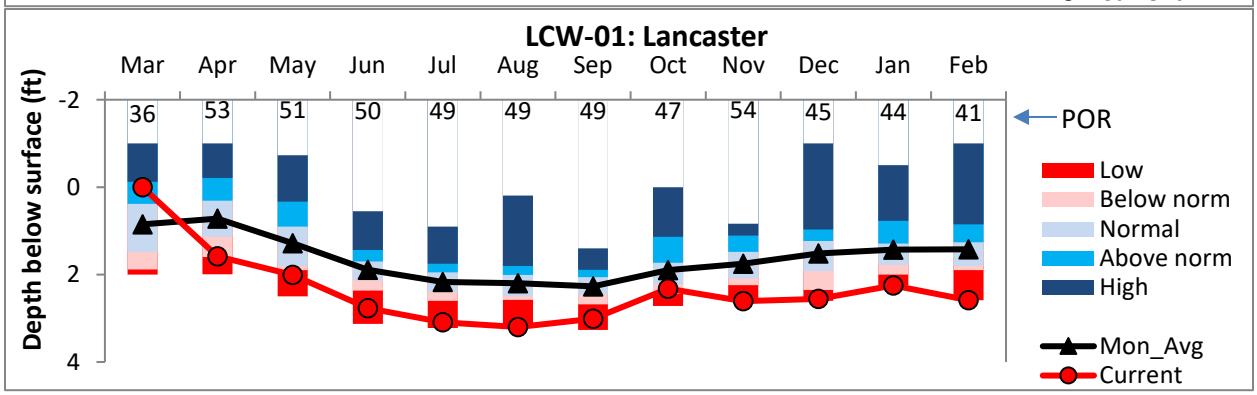

GSW-75: Greenfield
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
55 60 65
28 21 20 23 26 23 23 25 23 24 25 19
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current


LLW-19: Lisbon
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
8 10 12 14
26 29 26 26 26 27 26 26 25 25 27 25
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NAW-218: Nashua
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
24 26 28 30 32
59 50 57 56 55 57 56 55 57 56 53 56
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NFW-53: New Durham
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
17 18 19 20 21
27 27 26 25 24 27 25 26 25 26 26 25
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NLW-01: New London
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
-1 4 9 14
97 102 100 100 100 101 96 102 100 93 100 90
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

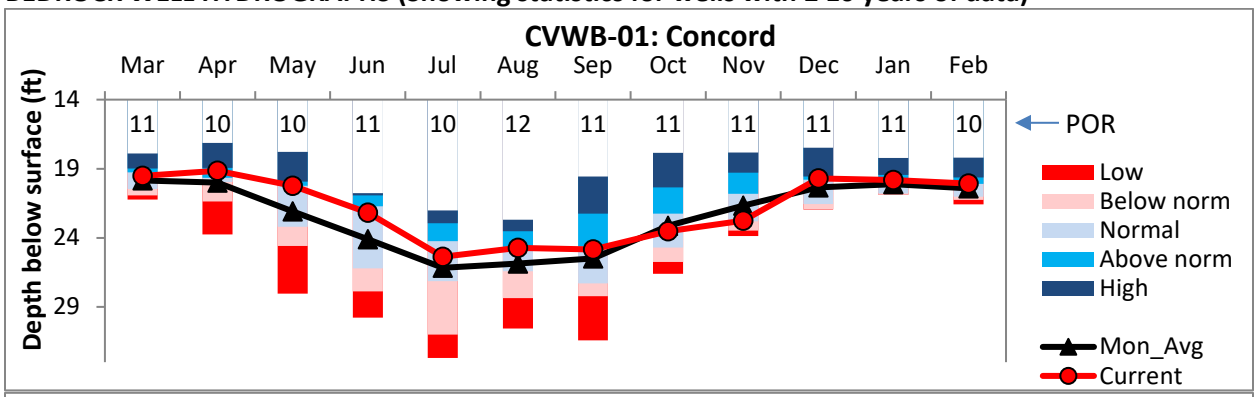

NPW-03: Newport
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
1 3 5 7 9
24 28 25 24 25 26 25 25 25 24 26 23
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

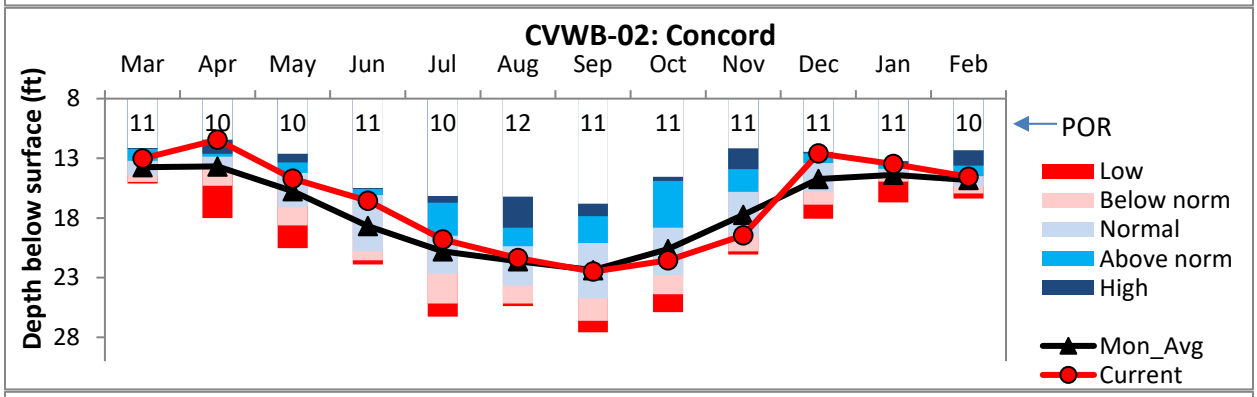

NPW-06: Newport
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
1 3 5 7 9
24 28 25 24 25 26 25 25 25 24 26 23
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

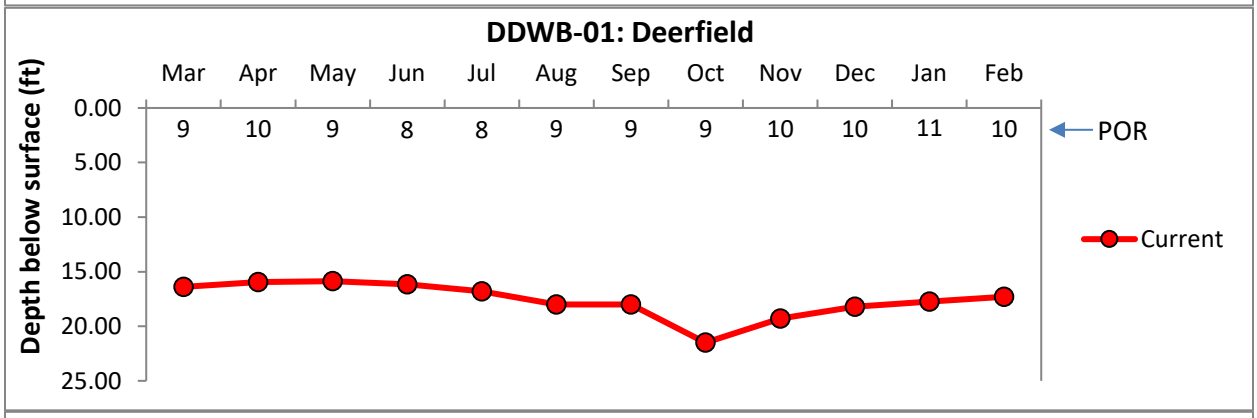

OXW-38: Ossipee
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
32 33 34 35 36 37
22 27 25 24 24 27 26 25 25 24 25 24
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

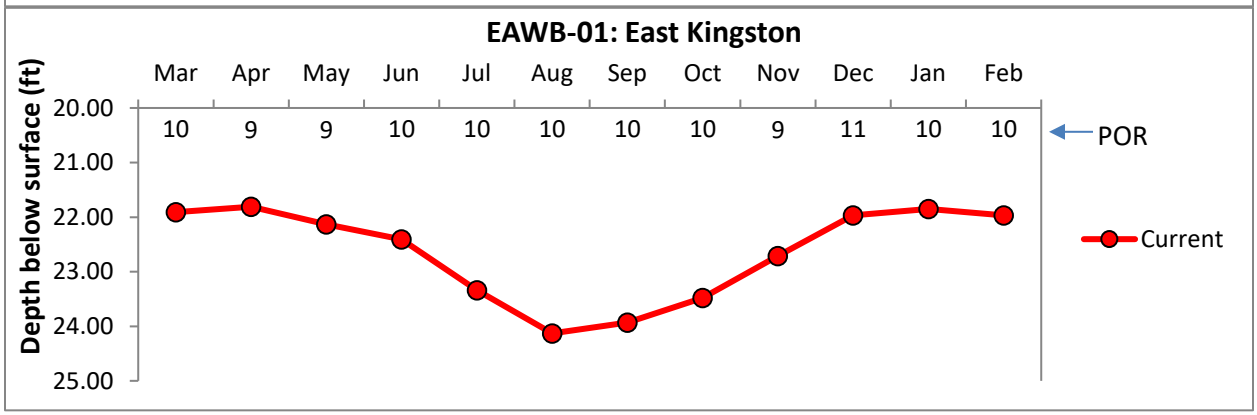

LCW-01: Lancaster
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
Depth below surface (ft)
-2 0 2 4
36 53 51 50 49 49 49 47 54 45 44 41
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current

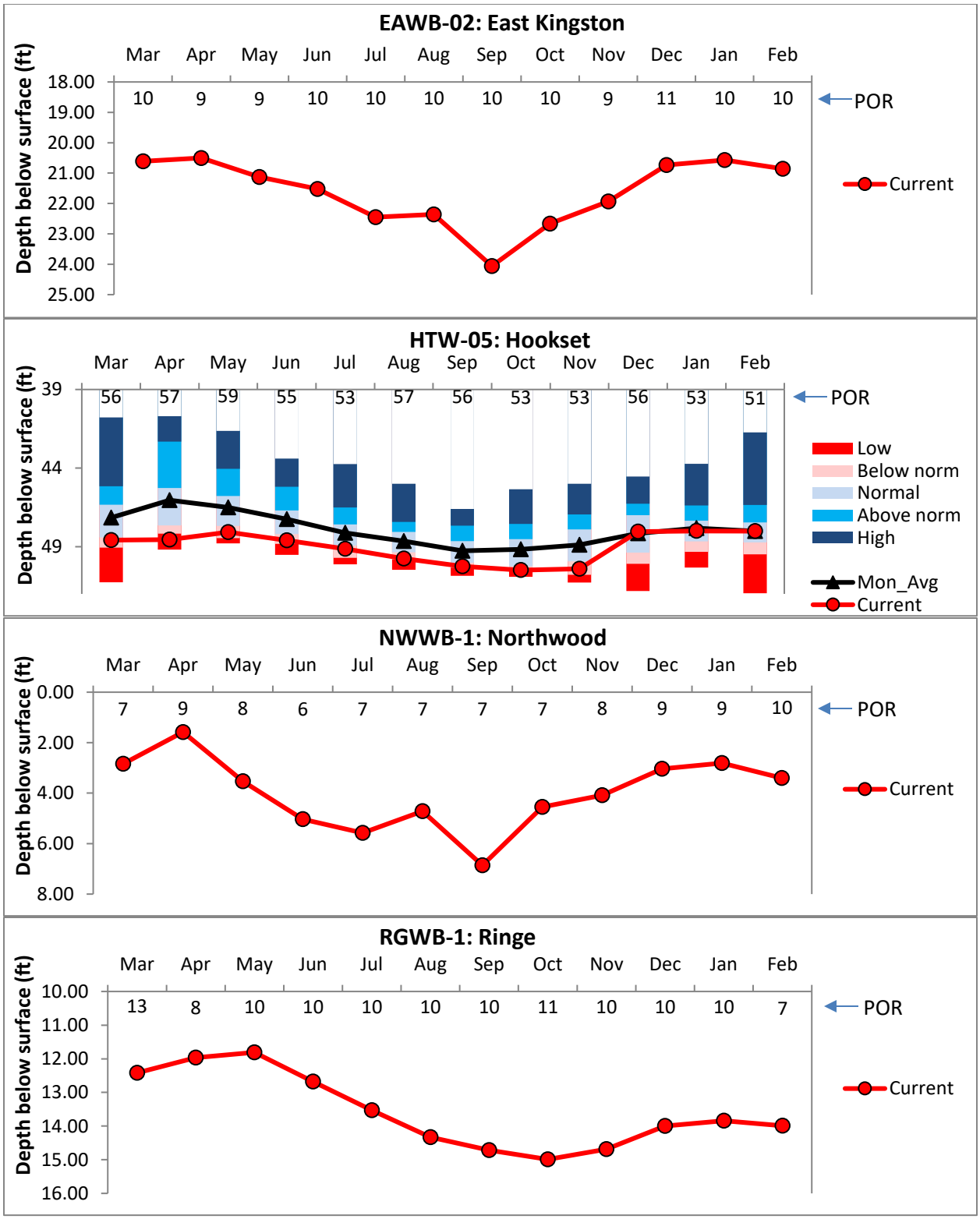
BEDROCK WELL HYDROGRAPHS (Showing statistics for wells with ≥ 10 years of data)










EAWB-02: East Kingston
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
18.00 19.00 20.00 21.00 22.00 23.00 24.00 25.00
10 9 9 10 10 10 10 10 9 11 10 10
POR
Current
HTW-05: Hookset
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
39 44 49
56 57 59 55 53 57 56 53 53 56 53 51
POR
Low
Below norm
Normal
Above norm
High
Mon_Avg
Current
NWWB-1: Northwood
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
0.00 2.00 4.00 6.00 8.00
7 9 8 6 7 7 7 7 8 9 9 10
POR
Current
RGWB-1: Ringe
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
10.00 11.00 12.00 13.00 14.00 15.00 16.00
13 8 10 10 10 10 10 11 10 10 10 7
POR
Current

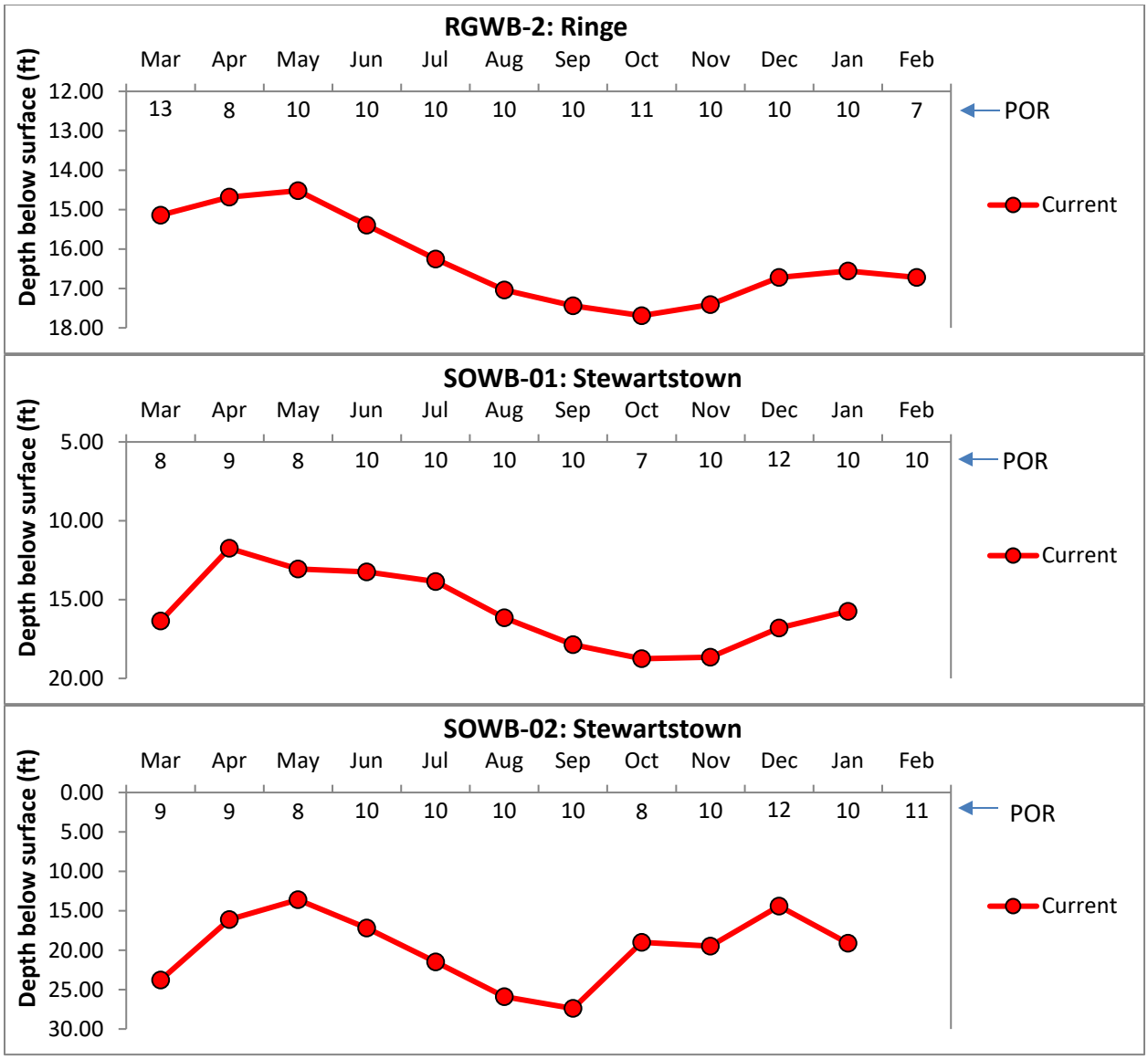

RGWB-2: Ringe
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
12.00 13.00 14.00 15.00 16.00 17.00 18.00
13 8 10 10 10 10 10 11 10 10 10 7
POR
Current
SOWB-01: Stewartstown
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
5.00 10.00 15.00 20.00
8 9 8 10 10 10 10 7 10 12 10 10
POR
Current
SOWB-02: Stewartstown
Depth below surface (ft)
Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb
0.00 5.00 10.00 15.00 20.00 25.00 30.00
9 9 8 10 10 10 10 8 10 12 10 11
POR
Current

Table 1. Summary of groundwater levels sorted by region

Well	Region	Well type	Screen/ open Interval (ft)	Depth to Water (ft)	Monthly Average (ft)	Current Status	Departure from Avg. (ft)	No. of meas.
BAW-10	Lakes	Overburden	23-25	1.5	2.46	High	1.04	21
FKW-01	Lakes	Overburden	45.5-47.5	10.26	12.97	Above norm	2.56	48
NFW-53	Lakes	Overburden	28-30	18.74	18.97	Normal	0.27	25
OXW-38	Lakes	Overburden	0-22.55	35.23	35.42	Normal	0.31	24
CVW-02.1	Merrimack	Overburden	59.8-61.8	40.04	-	Not Analyzed		-
CVW-04	Merrimack	Overburden	25-27	16.65	17.65	Above norm	1.07	54
DDW-46	Merrimack	Overburden	59.8-61.8	38.02	38.79	High	0.69	25
NAW-218	Merrimack	Overburden	66-68	27	28.25	High	1.15	56
CVWB-01	Merrimack	Bedrock	470-480	20.07	-	Above norm	0.34	10
CVWB-02	Merrimack	Bedrock	0-315	14.54	-	Normal	0.29	10
DDWB-01	Merrimack	Bedrock	0-300	17.29	-	Not Analyzed	-	-
HTW-05	Merrimack	Bedrock	0-102.7	48.01	47.82	Normal	0	51
NWWB-01	Merrimack	Bedrock	0-130	3.4	-	Not Analyzed	-	-
GSW-75	Monadnock	Overburden	35.8-37.8	58.73	62.05	High	3.22	19
RGWB-01	Monadnock	Bedrock	391-401	13.99	-	Not Analyzed	-	-
RGWB-02	Monadnock	Bedrock	0-285	16.72	-	Not Analyzed	-	-
CTW-73	North Woods	Overburden	105-107	8.4	7.06	Low	-1.13	23
LCW-01	North Woods	Overburden	28-30	2.59	1.43	Low	-1.17	41
SOWB-01	North Woods	Bedrock	443-453	-	-	Not Analyzed	-	-
SOWB-02	North Woods	Bedrock	0-303	-	-	Not Analyzed	-	-
BBW-53	Seacoast	Overburden	21-23	4.03	-	Not Analyzed	-	-
EPW-90	Seacoast	Overburden	39.45-40.7	26.3	28.22	High	1.98	13
EAWB-01	Seacoast	Bedrock	463-473	21.97	-	Not Analyzed	-	-
EAWB-02	Seacoast	Bedrock	0-323	20.86	-	Not Analyzed	-	-
NLW-01	Sunapee	Overburden	40-42	8	9	Normal	1.02	90
NPW-03	Sunapee	Overburden	40.5-42.5	6.63	5.89	Below norm	-0.53	23
NPW-06	Sunapee	Overburden	58-60	6.78	5.96	Below norm	-0.61	23
ADW-14	White Mtns	Overburden	77.5-79.5	6.92	5.81	Normal	-0.33	24
ADW-15	White Mtns	Overburden	16-18	8.8	7.8	Normal	-0.33	24
CBW-34	White Mtns	Overburden	21-23	12.65	12.63	Normal	0.31	24
LLW-19	White Mtns	Overburden	49.8-52.3	10.65	12.4	High	2.03	25